



Oregon

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July 15, 2014

Also Sent Via E-mail

Mr. Robert J. Wyatt
NW Natural
220 N.W. Second Avenue
Portland, OR 97209

**Re: Fill Water-Bearing Zone Trench Investigation Sampling and Analysis Plan and Quality Assurance Project Plan - Shoreline Segments 1 and 2, NW Natural Property and the Northern Portion of the Siltronic Corporation Property
Portland, Oregon
ECSI Nos. 84 and 183**

Dear Mr. Wyatt:

The Oregon Department of Environmental Quality (DEQ) reviewed the "Fill WBZ Trench Sampling and Analysis Plan and Quality Assurance Project Plan – NW Natural Gasco Site" dated June 2014 (Trench SAP/QAPP). DEQ received the Trench SAP/QAPP on June 12, 2014. NW Natural submitted the Trench SAP/QAPP as a supporting document to the Revised Trench Work Plan¹ that DEQ approved on April 28, 2014 with comments. The Revised Trench Work Plan describes the scope of work for collecting groundwater and geotechnical information to support the planning and design of an interceptor trench in the Fill water-bearing zone (WBZ) on the Gasco Site and the northern portion of the adjoining property owned by Siltronic Corporation (Siltronic). Anchor QEA, LLC prepared the Trench SAP/QAPP on behalf of NW Natural.

The primary purpose of this letter is to inform NW Natural that the Trench SAP/QAPP is incomplete as it lacks information specific to installing monitoring wells in the Fill WBZ. DEQ requests that the procedures and construction information for drilling and installing monitoring wells in the Fill WBZ be provided in a letter that addresses our comments on the Trench SAP/QAPP.

DEQ's comments on the Trench SAP/QAPP are provided below. Besides DEQ, the U.S. Environmental Protection Agency (EPA) reviewed the Trench SAP/QAPP. EPA's comments are captured in this letter.

GENERAL COMMENT

The focus of the Revised Trench Work Plan is on collecting groundwater data and geotechnical information for the Fill WBZ. To support the scope of work in the Revised Trench Work Plan,

¹ Anchor QEA, Inc., 2013, "Fill WBZ Trench Investigation Work Plan Gasco/Siltronic," November (received November 18, 2013), a work plan prepared on behalf of NW Natural.

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NW Natural includes Appendix K (Well Construction Development Plan) from the Construction Design Report² as Attachment 1. The attachment does not provide sufficient information to support the scope of work in the Revised Trench Work Plan. Although Fill WBZ monitoring wells are mentioned in Section 2.2 of Attachment 1, the drilling and well construction information provided is general and most applicable to installations completed in the Alluvium WBZ. Drilling and installation procedures specific to monitoring wells in the Fill WBZ are not included, such as the criteria for selecting the depth and placement of the well screen. Additionally, hydraulic conductivity testing at the monitoring wells is not mentioned. Based on our review of the Trench SAP/QAPP, DEQ understands that Attachment 1 has not been revised since the Construction Design Report was submitted in January 2012. DEQ notes that many of the specific procedures for drilling and installing monitoring wells in the Fill WBZ were developed after submittal of the Construction Design Report. NW Natural should supplement the Trench SAP/QAPP by providing procedures specific to constructing monitoring wells in the Fill WBZ in a letter that addresses DEQ's comments. DEQ considers the Trench SAP/QAPP to be incomplete without the requested information being provided.

SPECIFIC COMMENTS

Section 1.2. The Trench SAP/QAPP indicates, "...the new Fill WBZ monitoring wells will be sampled consistent with the Groundwater Source Control Performance Monitoring Plan as described in the Revised Groundwater Source Control Construction Design Report (CDR)..." For clarification and to avoid misunderstandings, groundwater samples from the new Fill WBZ monitoring wells should be collected for at least four consecutive quarters and analyzed according to the November 20, 2013 "integrated monitoring program" plus total petroleum hydrocarbons (TPH) and TPH fractions. Monitoring wells MW-39F, MW-40F, and MW-41F should also be analyzed for "natural attenuation parameters³," thiocyanate, sulfide, and any additional parameters needed to evaluate groundwater treatment (e.g., total dissolved solids, total organic carbon, magnesium, potassium, and calcium). The data from these three monitoring wells will be used to evaluate groundwater chemistry in the Fill WBZ and provide data for trench planning and design, including groundwater treatability, in the northern-most portion of the Gasco Site.

Sections 2.1. DEQ's general comment applies here.

Section 2.2. DEQ understands that the reference to MW-42 in the last sentence on page 3 should include an "F" to indicate the monitoring will be constructed in the Fill WBZ.

Section 2.3. NW Natural indicates that a report summarizing the results of the work completed per the Revised Trench Work Plan, including boring logs and laboratory analyses; will be provided as an appendix in the Fill WBZ Trench Design Evaluation Report (Trench Design

² Anchor QEA, LLC, 2012, "Revised Groundwater Source Control Construction Design Report, NW Natural Gasco Site," January (received January 31, 2012), a report prepared for NW Natural.

³ Natural attenuation parameters include total alkalinity, bicarbonate alkalinity, carbonate alkalinity, and hydroxide alkalinity; ammonia-nitrogen and nitrate-nitrogen; chloride and sulfate.

Evaluation Report). DEQ requests the Trench Design Evaluation Report to be submitted within 60-days following NW Natural's receipt of geotechnical testing results. DEQ further requests that the Trench Design Evaluation Report provide conclusions regarding constructing the Fill WBZ trench in sections in the uplands near the hydraulic control and containment (HC&C) system extraction wells. Based on these conclusions, the report should also include NW Natural's recommendations for the next steps in the trench planning and design process. Recommendations should address the data needs for final design identified in the Section 2.2 of the Revised Trench Work Plan.

Table 2. Table 2 lists the geotechnical tests NW Natural recommends conducting on soil samples. Section 5.1 of the Trench SAP/QAPP indicates that soil sampling and testing for geotechnical purposes will be performed consistent with Section 3.4.1 (Top of Riverbank Exploration and Sampling) of Attachment 2. Attachment 2 of the Trench SAP/QAPP contains Attachment 1 (Final Field Sampling Plan) from the Sediment Data Gaps QAPP⁴. DEQ notes that Section 3.4.1 includes testing representative soil samples for specific gravity. This analysis is not identified in Table 2 and should be added for consistency. In addition and consistent with Attachment 2, DEQ understands that if considerable thicknesses of fine-grained material are observed during drilling, undisturbed samples will be collected in Shelby Tubes for consolidated undrained Triaxial (CU-Triaxial) tests. In addition to samples collected for CU-Triaxial tests, DEQ requests that Shelby Tube samples of the upper silt unit be collected at the MW-40F and MW-42F boring locations for vertical permeability testing. Table 2 should be revised consistent with this comment. DEQ requests that a revised version of Table 2 be included as an attachment to NW Natural's letter addressing our comments.

As indicated in DEQ's general comment, an approach for estimating the hydraulic conductivity of fill material at new Fill WBZ wells is not included in Attachment 1. DEQ requests that based on observations made during drilling at each location, representative samples of the more permeable fill material be collected for grain-size analyses. Grain-size analyses will be used to document the nature of the material in which monitoring wells are screened and provide preliminary information on the water-bearing properties of the fill.

Figure 2. It appears certain monitoring wells (e.g., WS-44-29, WS-45-29, WS-46-33) on the Siltronic property are shown twice in different locations using different symbols (i.e., the wells are shown as extraction wells and monitoring wells). DEQ requests that NW Natural revise the figure to show all installations in the correct locations with the appropriate symbols for the Trench Design Evaluation Report.

Figure 3. To avoid confusion, DEQ recommends monitoring wells drilled and installed by Siltronic in August 2013 (i.e., WS-44-29, WS-45-29, WS-46-33) be clearly identified on the figure to avoid potential confusion regarding the well identification numbers. DEQ requests that NW Natural include a revised version of the figure in the Trench Design Evaluation Report.

⁴ Anchor QEA, LLC, 2010, "Data Gaps QAPP, Gasco Sediment Cleanup Action," July, a document prepared on behalf of NW Natural.

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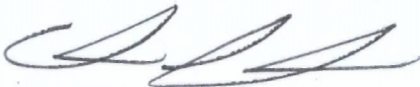
Attachment 1. As indicated in our general comment, Attachment 1 includes Appendix K from the Construction Design Report. The date of Attachment 1 appears to be January 2012. DEQ's comments on the Construction Design Report were issued on August 9, 2012. Consequently, in addition to this letter NW Natural should review and revise the attachment to incorporate DEQ's August 9, 2012 comments as appropriate for supporting the Revised Trench Work Plan (e.g., Section 4, Section 4.2). DEQ requests that the revised sections of Attachment 1 be included in the NW Natural's letter addressing DEQ's comments.

Attachment 1, Sections 2.2 and 2.3. DEQ's general comment applies here.

NEXT STEPS

DEQ continues to consider it important to complete the approved scope of work expeditiously so trench design can be completed as soon as practicable. DEQ requests that NW Natural provide a letter addressing our comments on the Trench SAP/QAPP on or before August 6, 2014.

Sincerely,



Dana Bayuk
Project Manager
Cleanup and Site Assessment Section

Cc: Patty Dost, Pearl Legal Group
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ECSI No. 84 File
ECSI No. 183 File